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CENTRAL INTELLIGENCE AGENCY

INFORMATION REPORT

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SECURITY INFORMATION

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COUNTRY	USSR (Kalinin Oblast)	REPORT	[redacted]
SUBJECT	Working Conditions and Exterior Ballistics Work at Branch No. 1, Gorodomlya Island	DATE DISTR.	25 August 1953
		NO. OF PAGES	11
DATE OF INFO.	[redacted]	REQUIREMENT	[redacted]
PLACE ACQUIRED	[redacted]	REFERENCES	[redacted]

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THE SOURCE EVALUATIONS IN THIS REPORT ARE DEFINITIVE.
THE APPRAISAL OF CONTENT IS TENTATIVE.
(FOR KEY SEE REVERSE)

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[redacted]

1. [redacted] 50X1

2. The following are corrections of the spelling of Soviet names appearing in the attached report:

   a. Popjedonoszew should be Pobedonostsev.
   b. Bosch-Kozyubinsky should be Bosh-Kotsyubinskiy.
   c. Wassilyev should be Vasilyev.
   d. Kisselyev should be Kiselov.
   e. Landyshev should be Landishev.
   f. Skripnitshenko should be Skripnichenko.
   g. Mizkevitsh should be Mitskevich.
   h. Dranovsky should be Dranovskiy (also reported as Dronovskiy).
   i. Tshernopyatov should be Chernopyatov.
   j. Brazeva should be Brattseva.
   k. Tshernykova should be Chernikova.
   l. Rasumova also reported as Razumova.

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STATE	#x	ARMY	#x	NAVY	#x	AIR	#x	FBI		AEC				[redacted]

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(Note: Washington Distribution Indicated By "X"; Field Distribution By "#".)

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[redacted]

REPORT [redacted]

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COUNTRY USSR

SUBJECT Working Conditions at Ostashkov and Exterior Ballistics Work There

PLACE ACQUIRED [redacted]

DATE ACQUIRED

DATE OF I

DATE DISTR. 28 JULY 53

NO. OF PAGES 9

NO. OF ENCLS. 1
(LISTED BELOW)

SUPPLEMENT TO REPORT NO. 50X1-HUM

THIS IS UNEVALUATED INFORMATION

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[redacted]

WORKING CONDITIONS IN OSTASHKOV IN NOVEMBER 1946

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1. [redacted]

2. [redacted]

3. As far as housing was concerned, sufficient space for the Germans existed. All apartments in two brick apartment houses were redecorated; in the wooden houses work was still in progress, but there were also enough apartments available.

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4. Fire wood supply was especially short and [redacted] forced to cut trees in the forest throughout the winter of 1946. Every eight to fourteen days [redacted] given a day off for this purpose.

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5. Work did not begin until the end of November, or early in December 1946. Approximately between the 20th and 25th of November, Col. POPJEDONOSZEW and Dipl. Ing. GROETTRUP arrived on the Island from Moscow to organize the work. POPJEDONOSZEW was very reserved and left everything to GROETTRUP.

6. The German group on the Island belonged to Branch No. 1 of Institute 88. Institute 88 was in Podlipki, a suburb of Moscow; to it belonged GROETTRUP and the rest of the Germans from Bleicherode and Soemmerda. GROETTRUP brought with him a list of salaries for the Germans in Branch No. 1 and divided them into working groups. He designated KIRCHNER as his deputy in administrative matters, and Dr. WOLFF was to function as the professional leader of the German specialists on the Island.

7. The following working groups were created /see Enclosure (A) an organization chart of Branch No. 1, Institute 88, Gorodomlya Island/:

   a. Ballistics: Dr. WOLFF; with him Dipl. Math. Werner MUELLER, Dr. SCHLIER and auxiliary personnel.

   b. Ballistic Special Group: Prof. KLOSE; with him [redacted] two assistants. The reason for the special position of the KLOSE group was that GROETTRUP did not want to have Prof. KLOSE under Dr. WOLFF. Relations between Prof. KLOSE and Dr. WOLFF were tense because he, KLOSE, observed soon enough that Dr. WOLFF played the more important role with GROETTRUP and the Soviets. 50X1-HUM

   c. Aerodynamics: Dr. ALBRING; with him Dr. SCHWARZ, Dr. SCHMIEDEL, CONRAD, Fritz MUELLER and auxiliary personnel.

   d. Thermodynamics: Dr. ZEISE, with him Dr. KIRST, Dr. REICHARDT.

   e. Fuels: Dr. SIEGMUND, [redacted] 50X1-HUM

   f. Chemical Group: Dr. MATTHES; with him Dr. OTTO, Dr. STRZELBA. 50X1-HUM

   g. Design: Dipl. Eng. BLASS; with him BRESE, ANDERS, BOLLET, SILBERNAGEL and others. 50X1-HUM

   h. Statics: Dipl. Eng. Rudolf MUELLER; with him Dipl. Eng. ADO 50X1-HUM [redacted] Dipl. Eng. BRANOKE, TOEBE [redacted] and WENZEL.

   i. Special Scientific Group: Prof. SCHUETZ, Prof. FRIESER [redacted], and Dr. HOPPE.

8. Only provisional offices were available in the beginning. Design was located in a small wooden building with several basement rooms, which became later a school. Most of the others worked in a similar building, which later became temporarily the administration building, and at the end of our stay in the USSR was used as a kindergarten for Soviet children whose parents were employed. Also several rooms in the wooden houses were used as working places. Frequently groups moved from one working room to another. The original institute was not usable. The building was damaged, probably by artillery, and showed fire damage; most of the windows and many doors were missing.

9. The Soviets soon initiated reconstruction, and single working groups moved into the institute building by the summer and fall of 1947.

 [redacted]

10. As working fields for the groups from Bleichrode and Soemmerda, reconstruction and development of the A-4 (V-2) was planned. This job had already occupied these groups in Germany in 1945-1946, at the so-called "Zentralwerke" at Bleicherode. [redacted] WOLFF and ALBRING brought data from their work at the "Zentralwerke" with them, and were thus able to work to some extent in the USSR. Prof. KLOSE was to work on the rocket "Wasserfall". KLOSE [redacted] could not return to Gema when deported from Berlin on 22 October 1946, and consequently had no data at the start [redacted] in Branch No. 1. KLOSE started then to recall by memory the necessary data. Even a tabulation of the atmospheric data (temperature distribution as a function of altitude, atmospheric pressure, air density) was newly calculated. (It appeared later that WOLFF had a tabulation of the German Normal-Atmosphere — as used by the German Army — but no cooperation existed between KLOSE and WOLFF, and KLOSE could not use WOLFF's material. Only after several months, in the spring of 1947, did reports reach [redacted] the USSR which had been written in KLOSE's department at Gema.)

11. When work began in the USSR, everything was lacking: paper, calculators, mathematical charts, etc. [redacted] the necessary work was executed logarithmically by using private tables. It was impossible in the beginning to get a clear decision from the Soviets in respect to working hours. The director of Branch No. 1 at this time, AGAFONOV, asked [redacted] preference. The Germans suggested: eight hours per day; the scientists (professors and doctors) six hours, Saturday afternoon free, and one day a week off for wood cutting. AGAFONOV made no definite commitments, but [redacted] approximately that way.

12. Working hours were not checked. It was customary to go home once in a while during working hours; this was also necessary because sanitary installations in the working place were very bad. In winter work always started later because the mornings were dark and there was often no electric current.

13. At the time of [redacted] arrival the following Soviets (especially in charge of Germans) were on the Island: the director, AGAFONOV; SIBELOV who had administrative duties and was later transferred to Podlipki; MATYUKHIN, an older person who had lower administrative functions, but called himself "Commandant" later on; and SHURIK, a party official, who became later party secretary in Ostashkov. There were also Soviet girls who worked as servants in the houses and German apartments, and kitchen personnel in the restaurant. Furthermore, soldiers were stationed on the Island who worked on building construction. It was rumored that they were a penal company and that they had been German prisoners of war.

14. In the beginning the most important Soviet for the work of the German specialists was BOSCH-KOZYUBINSKY. He arrived shortly after [redacted] on the Island and was presented [redacted] as the man responsible for all work questions. [redacted] He made the impression of being well-educated and of being one with many interests; he spoke fluent German and appeared to be familiar with the essentials in the rocket field. From the beginning he had a good relationship with Dr. WOLFF.

15. About this time two interpreters arrived on the Island. One of these, Rita SPROGIS, spoke excellent German and remained at Branch No. 1 for several years [redacted] until the spring of 1950); the second interpreter remained only for a short time, and was replaced by others.

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16. At the beginning BOSCH-KOZYUBINSKY asked what the German wishes were in regard to the work. He heard a lot of complaints — cautiously formulated by Dr. WOLFF, strongly expressed by KLOSE — which hurt BOSCH. 50X1-HUM But consequently he tried to improve [redacted] working conditions. For example, writing paper arrived. It was a thick, brown wrapping paper with a very high pulp content, which [redacted] had to cut in sheets of typewriter size. One could hardly write in ink on this paper. 50X1-HUM Sometimes [redacted] also had a very thin paper with very high pulp content, which was even worse for writing purposes. [redacted]

[redacted] A printing shop in Ostashkov printed calculation forms on brown paper of normal thickness. Several Russian calculators arrived, bearing the name "Felix". They were similar to the small German "Brunsviga" machines. The gear wheels were poorly fabricated, wore out quickly, and the machines were not reliable after a short while. 50X1-HUM It was very annoying that the calculators were very primitive in design. A few months later German Rheinmetall calculators arrived, partly for operation by hand, partly half-automatic, partly full-automatic. [redacted] worked with these machines [redacted] without any ma- 50X1-HUM repairs or overhauling. For some automatic machines carbon replacements for the motor were necessary; but [redacted] could not get them. All [redacted] 50X1-HUM to the Branch administration, or to 88 in Podlipki remained unanswered, despite [redacted] directions as to where these carbons were available in Ger- 50X1-HUM many. Consequently, several such machines could no longer be operated. [redacted]

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17. The first books [redacted] received for [redacted] work in Ostashkov were German books, taken from various libraries; for example, from the Air Academy in Gatow near Berlin. They were mainly tables (tables of logarithms, of squares, tables for trigonometric and hyperbolic functions, and various magazines (for example, Aircraft Research). With the exception of the tables, very little was available for [redacted] special type of work. 50X1-HUM The only literature on rockets was a report by SAENGER and BREDT, written during the War, which undoubtedly had been written more for propaganda reasons than any others. The purpose of the report may have been to promote rocket science.

18. In later years, perhaps after 1949, Russian books arrived regularly at the library of Branch No. 1 — mathematical, physical, chemical and other books. However, they were more for the Soviet co-workers there. Because of language difficulties the Germans hardly ever used them. It was a German wish to have the Magazine for Applied Mathematics and Mechanic (Zamm) in the library. But it took years, and only after 1950 [redacted] receive the new issues of the magazine; older issues were not 50X1-HUM available.

19. It was possible to order books from the Lenin library in Moscow. The only German who made much use of it was Dr. ZEISE. In general, it took a long time to get a book this way.

20. Shortly after BOSCH came, MALINOVSKAYA, a female planning engineer, arrived at Ostashkov. About three months after work began, BOSCH insisted that work records be kept of what was done during all working hours. Working time had to be closely observed, the work week was 48 hours. The German demand to be free on Saturday afternoon was taken into consideration. The Soviets agreed to this arrangement (otherwise they observed eitht hours of working time every weekday).

21. Slowly the habit developed for monthly working plans and of writing monthly reports about the fulfillment of the plans. In scientific work

it became customary that the results were slightly over 100 per cent. Difficulties developed in the working groups which depended on the supply of materials. The Soviet management was generally content if it could report the fulfillment of the working plan on paper.

22. Reports about research were written in German. At first one and later several German typewriters were available. The reports during the first period were written by Mrs. KNAACK (now Mrs. STAHL) and by Mrs. TROLLDENIER (now Mrs. SIEGMUND) in two or three copies. One copy went to Moscow. The German reports were translated by the interpreters into Russian. But these translations were often completed months after delivery of the German report.

EXTERIOR BALLISTICS OF THE WASSERFALL, OSTASHKOV (November 1946-February 1948)

First Task for Ballistic Examinations in Ostashkov

23. The formulation of the first tasks were stated in very general terms by the Soviets. All details were left to the initiative of the German workers.

Work Order for the WOLFF Group

24. This order requested the creation of ballistic data for the A-4, including tabulation of a firing table and further A-4 development. This project was first known as the "G-1" project (G stood for GROETTRUP); the Soviets later named it R-10.

25. This order also called for general theoretical research (without detailed subject matter). Researchers were: Dr. WOLFF, Werner MUELLER, Dr. SCHLIER. [redacted] Dr. WOLFF also began work on a theory 50X1-HUM turbations of the powered trajectory.

Work Order for the KLOSE Group

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26. This order included research on Wasserfall, and general theoretical research. The researcher [redacted] Dr. KLOSE [redacted] 50X1-HUM

27. Regarding general theoretical research, Dr. KLOSE made examinations for various thrust programs. For example, an intermittent drive was examined by which fuel was so distributed, that a certain portion of the fuel was alternately burned or used for thrust generation, and then followed a period of flying without thrust. The incentive to this idea was given by Dr. SIEGMUND /REG-1617/. But these considerations were executed without considering their technical performance.

28. Comparisons of such thrust programs with the normal procedure of constant flow were made. The result was, that by these other thrust programs no essential increase of range could be achieved. These questions were examined by calculation of the cut-off values of vertical ascents.

29. The continuation of previously mentioned examinations for target procedures with AA rockets (target-seeking methods, dog curve and generalizations) was also conducted under general theoretical research.

30. No cooperation between the WOLFF and KLOSE Groups existed.

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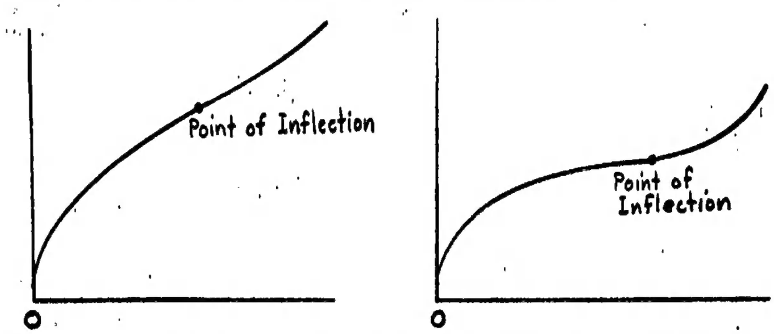
Wasserfall Calculations in Ostashkov

31. Continuing the research which had been done at Gema, several plane trajectories for Wasserfall were calculated, the deflections of which took place according to the differential equation of the ground calculating unit. Trajectories were calculated by means of the above-mentioned equations: (18), (16), (12), (13), (20), (4) to (7) [redacted] The calculations had the results indicated below. 50X1-HUM

32. Soon after the deflection from the vertical ascent, fairly large angles of incidence (15^{o}) appeared; but this does not matter, since the rocket is still flying with subsonic speed, has jet rudders and the necessary rudder angles can easily be achieved. In flying through the velocity of sound (the Mach Number 1 and 1.2), the angle of incidence decreases to 2 to 4^{o}.

33. In combating aircraft which are flying towards the launching point, the trajectory of the rocket has a turning point (point of inflection) before beginning the target approach path (see sketches below).



34. For increasing the altitude of the rocket after this turning point, in some cases rudder angles are necessary which are too large and would surpass the possible maximum of approximately 25^{o}; this meant that the rocket can not keep the prescribed trajectory. The reason for the large necessary rudder angles is that in supersonic region the distance $C_1 - S$ of the pressure center from the center of gravity is fairly great. All such data were supplied by the Aerodynamic and Design Departments.

35. The dead space, i.e., the space in which a target cannot be combated by the rocket, is relatively large, because the beginning of the target approach path often occurs very late.

36. Because only simple target approaches were examined, the transverse acceleration (load factor) of the rocket remained small: $\approx$ 2g.

37. These were the essential results in the Wasserfall examinations of the KLOSE Group until February 1948. The group was then dissolved, whereby research on the Wasserfall came temporarily to an end.

38. No research was conducted regarding stability questions at the start and during flight, or about the probability of hitting the target or of the effectiveness of hits; furthermore no comparisons were made between the effectiveness of the Wasserfall and AA artillery. [redacted]

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39. In the summer of 1948 the order came from Moscow for Section #1 (Ballistics, Dr. WOLFF) and Section #2 (Aerodynamics, Dr. ALBRING) to again work on Wasserfall. Section #2 should compile the aerodynamic data (c_w, c_a, c_m, Θ). Several data were given which originated probably from Soviet wind-tunnel measurements. The researcher was Fritz MUELLER, perhaps also CONRAD. Section #1 should calculate trajectories, using the data from Section #2, as follows:

a. Trajectory with vertical start and deflection into a linear end-path with cut-off angle $\gamma_{B_r} = 15°$. Tabulation of a program for the angle of inclination γ.

b. The same for cut-off angle $\gamma_{B_r} = 60°$.

c. The same for $\gamma_{B_r} = 30°$.

d. Calculation of a plane trajectory with prescribed target movement, whereby it was demanded, that the deflection should follow the differential equation of the calculating unit and that the angle of incidence at the passing of the rocket through the velocity of sound should be zero. [redacted] received no reply to [redacted] objection that both conditions could not be fulfilled, because the path of the rocket is uniquely fixed if the altitude angle should satisfy the differential equation of the calculating unit. The trajectory was then calculated only under the condition that the differential equation of the calculating unit was pertinent. 50X1-HUM 50X1-HUM

The Soviets demanded that the dependency of the c_w values on γ and η and the exact thrust component $S\cos\alpha$ should be considered in the path direction. The gravity acceleration g could be calculated independently from the altitude, constant at 9.81 m/sec^2 since the heights involved were small. The whole equation system was then solved simultaneously.

e. Calculation of a spatial trajectory with prescribed target movement. The Germans asked under which rules the rocket should fly with a spatial path curve, if for example the side angle σ of the rocket against a fixed direction in the horizontal plane should check in every moment with the side angle σ_Z of the target, and how the rotation around the longitudinal axis of the rocket behaves in flying a spatial curve. No answer was given by the Soviets. Section #4 (Guidance, Dr. HOCH) was also asked, but no definite reply was made.

40. The following way out was taken for ballistic calculations. First, $\sigma = \sigma_Z$ was assumed. Secondly it was assumed that the lift is independent of the rotation angle around the longitudinal axis of the rocket. One fictitious rudder angle η was introduced. It was regarded as a task for the guidance, to determine from the fictitious angle η, and from the rotation angle around the longitudinal axis of the rocket, the factually necessary deflections η_1 of the altitude rudder and of the side rudder η_2. The assumptions were decided upon in a conference between Dr. WOLFF, Werner MUELLER [redacted] 50X1-HUM

41. The whole equation system consists then of one vectorial force equation (= 3 scalar equations), the moment equation (= 1 scalar equation), and the geometric boundary equations for the various angles.

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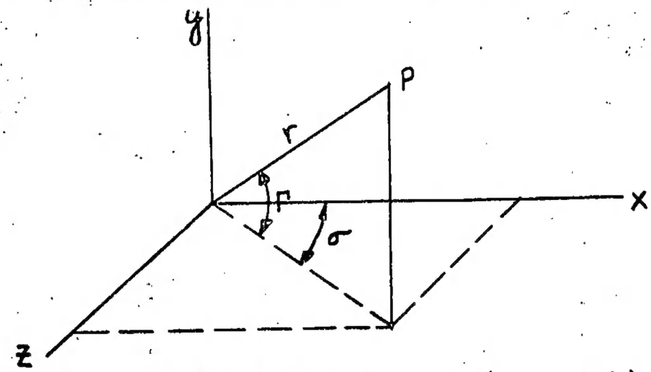
42. The introduction of spatial polar coordinates is useful for the treatment of the equation system. The following designations are valid:



x, y, z rectangular coordinates of a trajectory point (y = altitude).

r, Γ, σ polar coordinates ($\bar r$ = location vector, Γ altitude angle, σ side angle).

$\dot x, \dot y, \dot z$ rectangular coordinates of the velocity vector $\dot{\bar r} = \bar v$.

v, γ, γ_p polar coordinates of the velocity vector (v = amount of speed, γ = inclination angle of trajectory, γ_p = angle between the projection of the velocity vector on the horizontal plane and the x - direction).

43. Then the following relations are valid:

$$(24a,b,c)\quad \bar r = (x, y, z) = r(\cos\Gamma \cos\sigma,\ \sin\Gamma,\ \cos\Gamma \sin\sigma)$$

$$(25a,b,c)\quad \bar v = (\dot x, \dot y, \dot z) = v(\cos\gamma \cos\gamma_p,\ \sin\gamma,\ \cos\gamma \sin\gamma_p)$$

$$\begin{aligned}(26a,b,c)\quad \dot{\bar v} = (&\dot v \cos\gamma \cos\gamma_p - v\dot\gamma \sin\gamma \cos\gamma_p - v\dot\gamma_p \cos\gamma \sin\gamma_p,\\ &\dot v \sin\gamma + v\dot\gamma \cos\gamma\\ &\dot v \cos\gamma \sin\gamma_p - v\dot\gamma \sin\gamma \sin\gamma_p + v\dot\gamma_p \cos\gamma \cos\gamma_p)\end{aligned}$$

44. The unit vectors in the x,y,z - direction are labelled with $\bar a_1, \bar a_2, \bar a_3$ then the vectors

$$(27a,b,c)\quad \begin{cases} \bar E_1 = \cos\gamma \cos\gamma_p \bar a_1 + \sin\gamma \bar a_2 + \cos\gamma \sin\gamma_p \bar a_3 \\ \bar E_2 = -\sin\gamma \cos\gamma_p \bar a_1 + \cos\gamma \bar a_2 - \sin\gamma \sin\gamma_p \bar a_3 \\ \bar E_3 = -\sin\gamma_p \bar a_1 \qquad\qquad + \cos\gamma_p \bar a_3 \end{cases}$$

form a system of three pairlike, perpendicular to each other, unit vectors, and for the scalar products from (26) and (27) are valid:

$$(28a,b,c)\quad \dot{\bar v} \bar E_1 = \dot v,\quad \dot{\bar v} \bar E_2 = v\dot\gamma,\quad \dot{\bar v} \bar E_3 = v\dot\gamma_p \cos\gamma$$

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45. Consequently the values v, σ, γ_p are separated from each other by using the coordinates system (27). This coordinates system is the right one for treatment of the three force equations. The first equation is the one in the direction of the path tangent. It becomes in an analogous way for the plane case a differential equation of second order for r. Only additional terms appear which contain σ and its derivatives.

$$v^2 = \dot r^2 + r^2(\dot\Gamma^2 + \dot\sigma^2 \cos^2\Gamma)$$
$$v\dot v = \dot r\ddot r + r\dot r(\dot\Gamma^2 + \dot\sigma^2\cos^2\Gamma) + r^2(\dot\Gamma\ddot\Gamma + \dot\sigma\ddot\sigma\cos^2\Gamma - \dot\sigma^2\dot\Gamma\sin\Gamma\cos\Gamma)$$

46. The equation for γ remains as before:

$$v\sin\gamma = \dot r\sin\Gamma + r\dot\Gamma\cos\Gamma$$

47. In addition two equations are found:

$$v\cos\gamma\,\sin(\gamma_p - \sigma) = r\dot\sigma\cos\Gamma$$
$$v\cos\gamma\,\cos(\gamma_p - \sigma) = \dot r\cos\Gamma - r\dot\Gamma\sin\Gamma$$

48. From one of these equations, or also by the equation resulting from division

$$\tan(\gamma_p - \sigma) = \frac{r\dot\sigma\cos\Gamma}{\dot r\cos\Gamma - r\dot\Gamma\sin\Gamma}$$

results γ_p. Through differentiation of the equations for γ and γ_p results $\dot\gamma$ and $\dot\gamma_p$. Therewith the left sides of the second and third force equation are known. These and the remaining equations are for the determination of the angles. The angle of incidence is always positively calculated in spatial trajectories.

49. In a critical review of the results, the following was pointed out. The trajectory calculation in the above mentioned way is already in a plane case, but especially in the case of a spatial trajectory, a very lengthy affair. In some respects it discloses more than is actually necessary to know, like the value of speed at every moment, the path coordinates, etc. But for the intended purpose it would be fully sufficient to know that the rocket can be guided to hit the target. On the other hand, it is of no interest to know the exact flying time until the impact and what the speed of the rocket is at every moment. It would be more reasonable not to integrate the first force equation every time under consideration of all circumstances, especially since the course of velocity in the various trajectories is not very much different, but assume once and for all a fixed velocity course and then examine, which transverse accelerations, etc. appear. For this purpose it should actually be known in which way the rocket is being guided. Research in this direction was not done because of lack of time. The deadline for completion of the Wasserfall calculations was September or October 1948. To assist in this work three Soviets had arrived from Moscow: one engineer who worked in the aerodynamics section, one engineer and one calculator, both women, who participated in trajectory calculations. They did numerical integrations after Adams-Stoermer.

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ENCLOSURE (A) - Organization Chart of Branch No. 1, Institute 88, Gorodomlya Island, USSR

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Organization Chart of
BRANCH No. 1 - GORODOMLYA ISLAND
OSTASHKOV – USSR

ENCL. (A)

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DIRECTOR:	SUKHOMLINOV
CHIEF-ENGINEER:	KURGANOV UNTIL SUMMER 1949 WASSILYEV SINCE SUMMER 1949
CHIEF-DESIGNER:	DIPL.-ENG. GROETTRUP UNTIL FALL 1950 DR. HOCH OCT/NOV 1950 DR. WOLFF NOV 1950 - JUN 1952
DEPUTY CH.-D.:	KISSELYEV

SECTION No.:	1	2	3	4	5	6 *)	7	8 *)	9	10 *)	11
DESIGNATION:	BALLISTICS	AERODYNAMICS	POWER PLANT	GUIDANCE	DESIGN	MEASURING INSTRUMENTS	CHEMISTRY AND FUELS	ELECTRONICS	WORKSHOP	STRESS ANALYSIS	BUILDING MAINTENANCE
GERMAN SECTION-LEADER:	DR. WOLFF	DR. ALBRING	DR. UMPFENBACH	DR. HOCH UNTIL NOV 50 GERD MUELLER SINCE NOV 50	DIPL.-ENG. BLASS	PROF. DR. SCHUETZ	DR. MATTHES	PREIKSCHAT	APEL	DIPL.-ENG. RUDOLF MUELLER	JAFFKE
GERMAN DEPUTY:	DIPL.-MATH. WERNER MUELLER	DR. SCHWARZ	PROF. DR. PAUER	GERD MUELLER UNTIL NOV 50 — SINCE NOV 50	ENG. ANDERS ENG. BOESE	DR. COERMANN	DR. OTTO		WUTTKE		SCHRADER
SOVIET SECTION LEADER:	—	SOLOVYEV	MIZKEVITSH	TSHERNOPYATOV	NESTEROV		MISS BARANOVA UNTIL 1950 MRS. RASUMOVA SINCE 1950	TSHERNOPYATOV	SHUNDRIKOV		AUSTRUM
SOVIET CO-WORKERS:	LANDYSHEV MRS. KHURTINA	SKRIPHITSHENKO KAMELEYEV MRS. SVERENKO	YOFFE FREIMAN DRANOVSKY MRS. KOSHARINOVA	MRS. YOFFE MISS PANOVA MISS KOROLYEVA	GOLOVANOV MISS BRAZEVA	MISS TSHERNYKOVA	MRS. MIZKEVITSH			KOSHARINOV	SVERENKO
SUBDEPARTMENTS		WIND TUNNEL (2. OBJECT) DR. ALBRING, SKRIPHITSHENKO WATER CHANNEL DR. SCHMIEDEL UNTIL 1949, PROF. DR. FRIESER SINCE 1949	1 TON-TEST STAND (1. OBJECT) DR. UMPFENBACH, DR. FERCHLAND, BRUNNER, SCHÄFER, YOFFE NOZZLE SPRAY LAB. PROF. DR. PAUER, MRS. KOSHARINOVA	GUIDANCE, KOML. "TRAJECT. MODEL" DR. HOCH, GERD MUELLER MEASURING INSTRUMENTS PROF. DR. SCHUETZ ELECTRONICS PREIKSCHAT		*) 1948 OR 1949 INCORPORATED INTO SECT. 4	20 t - TEST STAND DR. SIEGMUND	*) 1948 OR 1949 INCORPORATED INTO SECT. 4		*) 1949 (?) INCORPORATED INTO SECT. 5	

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